

his work was henceforth mainly directed to that subject. He spent his vacations at the laboratory of the Marine Biological Association at Plymouth and in the Zoological Laboratory at Naples, and devoted himself to laborious and systematic measurements of the parts of various marine organisms. These researches were continued with increased vigour at University College, London, where in 1891 he succeeded Prof. Ray Lankester as Jodrell professor of zoology. Here he entirely fulfilled the expectations which had been formed of him at Cambridge. Effective and enthusiastic as a teacher, he soon gathered around him a body of young workers whom he inspired by his own intensive fire.

During his career at University College he played a leading part in initiating the changes which, after some set-backs, resulted in the recent reorganisation of the University of London as a teaching body. In the completion of this most important work he was debarred from active participation, for in 1899 he was appointed the Linacre professor of comparative anatomy in the University of Oxford.

At Oxford he devoted himself with signal success to the duties of his professorship, paying special attention to the subject of variation. He again formed the centre of an active school of research, and founded in conjunction with Prof. Karl Pearson the journal *Biometrika* to advance the subject which he had so much at heart. Of his biometric work much might be said, but this must suffice. He was the one English biologist who actually realised what the whole attempt to give quantitative exactness to biological concepts really means; and he was the first to calculate organic coefficients of correlation and to suggest their important bearing on evolution.

Weldon held the chair at Oxford until his death on Good Friday last, after an illness of little more than twenty-four hours. He was born in 1860, and was therefore a comparatively young man when he died. He had about reached the stage of life when the germinating processes of the brain have attained their maximum and the mind begins to take stock of its ideas and to seek for means of coordinating them and of so bringing them before the world. He had several works on hand, all of which are unfinished. The most important, perhaps, is that in which he hoped to set down the conclusions he had reached on the great subject of the origin and the handing on by heredity of the properties of organisms.

His work, therefore, is not finished, but of whom can it be said that his work is finished? He has at least carved out the steps by which others will mount. He has sown the seed. It is for us who remain and for those who come after us to reap the fruits of his labours.

He was essentially a good man, and happiness was his portion in this life. Blessed in his domestic circumstances, and in holding one of the most distinguished positions the zoological world has to offer; in the possession of good health, of considerable bodily strength and activity, of indomitable energy, of a quick and penetrating intellect which rendered all intellectual effort pleasurable, of acute literary and artistic instincts, of a simple, honest, and lovable nature which endeared him to all who came in contact with him, he had everything which is necessary for earthly happiness. So amply had nature lavished her gifts upon him that he might well have been counted among her spoilt children. But he was lofty in his aims and strenuous in his life. His early death is a grievous blow to science; to his friends it is an affliction hard to be borne; to those who loved him it can only appear as a cruel and unnecessary calamity;

but yet, can we say that he was not happy in his death, as in his life?

Under the wide and starry sky
Dig the grave and let me lie,
Glad did I live and gladly die
And I laid me down with a will.

PROF. PIERRE CURIE.

M. PIERRE CURIE, co-discoverer with his wife, Mme. Skłodowska Curie, of the element radium, and the investigator of many of its properties, met his death as the result of a street accident in Paris on Thursday, April 19. He was crossing the Place Dauphine when he was knocked down by a cab and fell under a heavy van coming from the opposite direction. The wheels passed over his head, and when taken to the police station life was found to be extinct.

Cut off in the midst of a career of active scientific investigation, in the flower of life and at the height of a unique reputation, brilliantly won and universally acknowledged, his death will be mourned by the whole civilised world. In this country, where the importance of his work and discoveries was early and fully recognised, and where the fame attaching to his name has spread widely, deep sympathy will be felt for Mme. Curie in her tragic bereavement, coupled with a sense of loss that a partnership in science so illustrious and fruitful has been brought to so untimely a close.

Born in Paris on March 15, 1859, Pierre Curie received his early education at the Sorbonne, where he attained the degree of Doctor of Science. He was made professor of physics in the Municipal School of Physics and Chemistry in Paris in 1895, and in 1900 he became professor at the Sorbonne. His earlier researches, extending over the period 1885-1894, included investigations into the phenomenon of piezoelectricity, in conjunction with his brother, J. Curie, the construction and use of electrometers and guarding condensers, the magnetic properties of iron, oxygen, and other substances at different temperatures, and the construction of sensitive aperiodic balances.

In 1895 M. Curie married Marie Skłodowska, one of the senior students at the Municipal School, where he was professor, and joined his wife in the new field of research opened up by M. Henri Becquerel's discovery of the radio-activity of uranium and its compounds. From 1898 onwards appeared the remarkable joint publications dealing with the discovery of radium and the investigation of its properties. The great advances made by the two investigators in this field may be traced to the collaboration of a trained physicist and a skilled chemist in a subject which may truly be described as a meeting ground of the two sciences. M. Curie's earlier results on piezoelectricity, and the construction and use of electrometers and condensers were ingeniously applied to the requirements of the new work, and in his hands resulted in a ready and trustworthy method for the electrical measurement of radio-activity being worked out. In the detection and initial stages of the separation of radium and polonium in pitchblende, the method accomplished what in the hands of Bunsen the spectroscope had accomplished in the detection and separation of caesium and rubidium in the waters of Durkheim. When sufficient radium had been obtained, M. Curie and his pupils investigated the physical properties, while Mme. Curie devoted herself to the more purely chemical problems, the determination of the atomic weight of the new element, and the attempt to separate polonium.

M. Curie's most important contributions to the study

of the nature of the new element comprise the discovery, in conjunction with Mme. Curie, of the so-called induced activity conferred by radium on surrounding objects, and the proof that the penetrating radiations transport negative electricity even after they have been made to pass through a sheet of metal connected to earth. In conjunction with M. Laborde he discovered and measured the spontaneous evolution of heat from radium compounds.

In 1903 the Davy medal was conferred by the Royal Society on M. and Mme. Curie, and they shared with M. Branly the Osiris prize, and with M. Becquerel the Nobel prize for physics. M. Curie was made a member of the Institute of France in 1905. He will be remembered in this country for the lecture on radium, delivered with characteristic modesty and simplicity of manner, at the Royal Institution in 1903. He refused the Cross of the Legion of Honour offered by the French Government, on the ground that he preferred to remain a simple citizen, holding no doubt the view that scientific discovery is its own sufficient reward.

It has been said by a recent writer that there will come a time when men will date the coming in of their kingdom to the day when Curie and Laborde discovered the spontaneous evolution of heat from radium. Certainly no limit can be set to the consequences in the near or distant future which may be expected to flow from the discoveries with which the name of Curie is associated.

Like Röntgen shortly before, Curie emerged at one step from comparative obscurity to universal fame, and what they achieved is still within the horizon of the humblest investigator. Like the soldiers of Napoleon, each of the rank and file of the army of patient investigators carries in his knapsack a marshal's baton. The career of M. Curie illustrates this, and continues as an inspiration and encouragement to others. None have set in motion more pregnant influences. No one stands in less need of the historian to perpetuate his memory. F. S.

NOTES.

IN the disastrous earthquake at San Francisco, a detailed description of which is given in another part of the present issue, it is reported that upwards of 1000 persons lost their lives, and that material damage was done to the value of more than sixty million pounds sterling. There seems little reason to doubt that most of these lives and the greater part of the property were lost in the fire which followed the earthquake, and that a little forethought would have prevented, or at least greatly lessened, the awful calamity. Electric mains were broken by the earthquake shock at a time when the current was being supplied, and gas and water mains were shattered. The electric current does not appear to have been stopped at the power stations, and the consequent numerous short circuits which occurred soon inflamed escaping gas and set fire to buildings in many parts of the city. The broken water mains obliterated the water supply, and the only means of checking the fire seems to have been the demolition by dynamite of property in its path. The steel buildings in the city appear to be almost intact. The earthquake did not damage them, and the fire only consumed the woodwork. Despite the rumours which have been in circulation as to damage to universities and observatories in the disturbed area, it is gratifying to know that there is as yet no confirmation of such calamities. Upon inquiry at the Royal Astronomical Society, we learn that no news has been received about

any of the Californian observatories. Astronomers are particularly anxious as to the fate of the Lick Observatory, situated as it is very near to the centre of disturbance, and in view of a rumour that has reached a London fire insurance company of serious injury to the observatory. The Solar Observatory at Mount Wilson—near Pasadena, which is ten miles N.E. of Los Angeles—is probably too far to the south to have been damaged.

SOME changes in the organisation of the Geological Survey of Canada have recently been made by the Premier, Sir Wilfrid Laurier. For more than five years Dr. Robert Bell, F.R.S., has been the acting-director of the Survey, and has managed the business as well as the scientific affairs to the satisfaction of the scientific, mining, and the general public. In this period he has accomplished much valuable work, initiated many useful new features, and raised the standing of the Survey in general estimation. Since the Survey began, sixty-three years ago, about 470 maps have been prepared and issued, and nearly one-third of this number have been published during the past five years, while others are nearly ready. By the change of organisation which has just been instituted, a business administrator has been appointed, while Dr. Bell is given the title of Chief Geologist of the Dominion. Dr. Bell will continue to prepare his reports, maps, and other works, and will have a free hand in geological matters, so that he ought apparently to be congratulated on being relieved of a troublesome and difficult part of his work.

THE bi-centenary of the birth of Benjamin Franklin was celebrated by the American Philosophical Society at Philadelphia on April 17-20, in accordance with the programme announced in NATURE of March 29 (p. 515). Addresses were read from the universities of Oxford, Cambridge, Glasgow, and Edinburgh, the Paris Academy of Sciences, and many other institutions. A statue of Franklin, presented to the City of Paris by Mr. J. H. Harjes, was to have been dedicated on April 20 at an international festival, in which the French Government had arranged to take part, but the celebrations were postponed in consequence of the catastrophe at San Francisco.

PROF. W. OSTWALD has been elected a foreign member of the Danish Academy of Sciences.

PROF. GABRIEL OLTRAMARE, who for fifty years held the chair of mathematics at Geneva University, died on April 10, in his ninetieth year.

THE death is announced, at sixty-five years of age, of Dr. N. S. Shaler, professor of geology at Harvard University and dean of the Lawrence Scientific School.

THE annual meeting of the South African Association for the Advancement of Science will be held at Kimberley on July 9-14, under the presidency of Mr. G. F. Williams.

DR. DUDLEY BUXTON has been elected chairman of the council of the Selborne Society for the ensuing year, during which the society will attain its majority, having been founded in 1885. The annual *soirée* will be held on May 25, when the president, Lord Avebury, will deliver an address.

A TELEGRAM from Sarajevo, Bosnia, states that at 11 a.m. on April 19 a short, sharp earthquake shock was felt there. The shock was undulatory in character, and travelled from west to east. An earthquake shock was felt at Grants Pass, Oregon, at 1.11 a.m. on April 23. The Wellington correspondent of the *Times* reports that both the Eastern